

INTELLIGENT TRANSPORTATION SYSTEMS

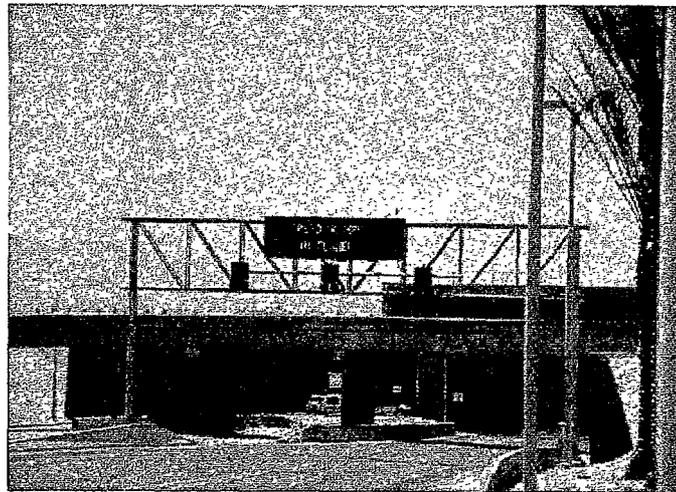
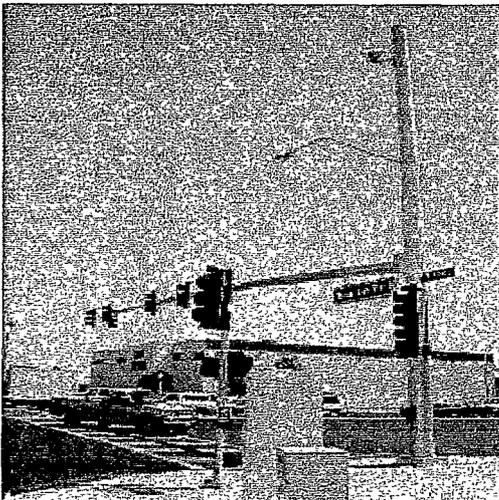
STRATEGIC PLAN FOR LAS VEGAS VALLEY

NOTE TO READER:

THIS IS A LARGE DOCUMENT

Due to its large size, this document has been segmented into multiple files. All files separate from this main document file are accessible from links ([blue type](#)) in the [table of contents](#) or the body of the document.

*Intelligent Transportation System
Strategic Plan
for
Las Vegas Valley*



*DKS Associates
November 1996*



DOT/FHWA
101586

This document consists of four documents and an appendix of graphs and charts. Each of the individual documents is included on this page as a link. Please select the section you wish to view and click on it when the hand comes up. This will bring up the section you want.

TABLE OF CONTENT

[INTELLIGENT TRANSPORTATION SYSTEMS STRATEGIC PLAN FOR LAS VEGAS VALLEY](#)

[INTELLIGENT TRANSPORTATION SYSTEMS STRATEGIC DEPLOYMENT PLAN FOR THE LAS VEGAS VALLEY, User Service Plan](#)

[INTELLIGENT TRANSPORTATION SYSTEMS STRATEGIC DEPLOYMENT PLAN, Functional Area Plan](#)

[INTELLIGENT TRANSPORTATION SYSTEMS STRATEGIC DEPLOYMENT PLAN, Alternative Technologies Report](#)

[APPENDIX OF GRAPHS AND TABLES \(this document is all images and non-text editable, it represents a file size of almost 4mb\)](#)

Route Slip

Distribution:

U.S. DEPARTMENT OF
TRANSPORTATION

To: Name	Date	Org/Rtg Symbol
Mark Kehrli - Region 9	2/11/97	

Remarks:

- Per Your Request
- For Your Information
- Per Our Conservation
- Note and Return
- Discuss With Me
- For Your Approval
- For Your Signature
- Comment
- Take Appropriate Action
- Please Answer
- Prepare Reply For Signature Of

More feedback on the Las Vegas EBP. Mere is a typical letter NDOT sent to each of our three peers. We had a non-consultant peer review (Jim Wright, Paul Jsvanis, and Joel Markovitz) give input at critical points in the process. We are moving forward with implementation, and will soon get a consultant or two on-board to do the system architecture and other tasks. Also, LVACTS may expand to include freeway management, that would be a first.

cc: John Gerner (HTV-10)
Charlie Goodman (HEP-22)
Jeff Lindley (HVH-1)

From: Name	Telephone	Org/Rtg Symbol
Greg Novak	702-687-1203	FHWA

Form DOT F1320.9 (Rev 5-84) Supersedes All Previous Editions

U.S. Government Printing Office: 1991 -525-056/40229



808 MILLER. Governor

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION
1263 S. Stewart Street
Carson City, Nevada 89712

February 6, 1997

INT
NA
ADA
ADM MGR
FIN
PLN
PRM
TRN
UTL
WTR
ENV
SAF
RES
LEG
REL
GEN

TOM STEPHENS. P.E.. Director

In Reply Refer to'

PSD 1.29A

Mr. Jim Wright
Minnesota DOT Metro Division
Waters Edge
1500 W. County Rd. B-2
Roseville, Minn. 55113

Dear Jim:

I would like to take this opportunity to thank you and the Minnesota DOT for allowing you to serve on the Advisory Panel for the Las Vegas ITS EDP Study. Your review of the Study products and advise contributed to the success of the project.

The Nevada DOT believes the Study, copy enclosed, has already been a success through the quick approval by the Department and the Las Vegas MPO. Study recommendations have already been incorporated into the recommendations of two separate corridor Major Investment Studies underway within the Las Vegas area. In addition, the Department is moving forward on implementation of a pilot corridor.

It is my understanding that this was the first time a nonconsultant Advisory Panel for an ITS EDP Study had been used. In my opinion it was a success, and I believe that other studies could benefit from its use. However, there were several problems, including: identifying individuals with the knowledge and experienced necessary, getting a commitment to serve from those identified, and always the problem of logistics.

If I can be of any assistance, please don't hesitate to call.

Sincerely,

D. Keith Maki
Research Division Chief

Attach

cc: Greg Novak, FHWA



EXECUTIVE SUMMARY

What is an ITS Strategic Plan?

“Intelligent Transportation Systems” (ITS) is a collective term for measures targeting the efficient operations and management of transportation facilities and services, usually involving the use of electronic equipment for collecting, processing, reacting to, or disseminating dynamic information. The ITS Strategic Plan for the Las Vegas Valley is a document that serves as a roadmap for implementation of ITS programs in the region.

The ITS Plan focuses on both institutional issues and technological opportunities. It blends user needs, advanced technologies, and the desires of the region to implement appropriate strategies. Building an institutional coalition is very critical towards the success of ITS deployment.



What is in the Plan?

Through a process involving public and private stakeholders in the Las Vegas Valley and four different focus groups, the following ITS programs were developed and considered as high priority:

- Establish a regional Traffic Management Center (TMC);
- Implement a freeway management system;
- Implement an incident management system to promote quick response in clearing incidents that cause traffic congestion, and to manage traffic during incidents;
- Provide service patrol for freeways and expressways;
- Provide a regional traveler information;
- Establish accident investigation sites for freeways and expressways;
- Implement a transit management and information system;
- Provide an automatic incident detection system on freeways.

The above programs were approved by the RTC Board in February 1996 to be high priority for public sector implementation. The ITS Plan calls for implementing these programs within five years, by 2001. The TMC functions as a coordination center for ITS operations. The Plan calls for co-location of the TMC with the Las Vegas Area Computer Traffic System (LVACTS).

Besides the above high priority programs, the plan also calls for developing partnerships with the private sector and quasi-public agencies for the following programs:

- Smart Shuttles - Partnership with the Resort Industry and major employers;
- Airport Traveler Information System - Partnership with Department of Aviation;
- Kiosks - Partnership with the Convention Authority, resort airport and- private industry;

- Personal Data Assistants - Partnership with vendors;
- Rental Car Navigational System - Partnership with rental car companies;
- Resort Corridor Signing System - Partnership with Resort Association;
- Private Transit/Taxi Probes - Partnership with Taxicab Association;
- Smart Cards - Partnership with vendors;



How much would it cost?

Within the ITS Plan, the high priority programs are divided into individual projects. Implementing the high priority projects would cost the public sector over \$42 million in the next **five years**. **Table ES1** below summarizes this cost by project type:

TABLE ES-1: Cost of Implementation (In \$1000)
High Priority Program Areas

Project Nature	1997	1998	1999	2000	2001	Total
Freeway related projects	5,246	2,286	6,956	7,340	735	22,563
Non-freeway related projects	1,280	2,086	650	-	6,670	10,686
Transit related projects	3,000	2,800	2,050	-	500	8,350
Incident communication projects	-	1,025	-	-	-	1,025
Total	9,526	8,197	9,656	7,340	7,905	42,624

It is intended that the following agencies take lead roles in ITS implementation:

- Freeway related projects -** Nevada Department of Transportation (NDOT)
- Non-freeway related projects -** Local county and cities, through the RTC Transportation Improvement Program (TIP)
- Transit related projects -** Clark County RTC
- Incident communication projects -** Nevada Highway Patrol, METRO, and other police/emergency response agencies.



How will this benefit the community?

Implementing the high priority programs will benefit the community in the following ways:

- **Reduce travel delay**
- **Reduce accidents**
- **Reduce emissions and pollutants**
- **Reduce fuel consumption**

Through an empirical analysis, the benefit/cost ratio of implementing the high priority programs were evaluated, and the results are shown in Table ES-Z:

TABLE ES-2: Summary of Benefit/Cost Analysis
for the High Priority Programs

High Priority Programs	Annual Benefits	Annual Costs	B/C Ratio
Freeway Management System	\$23,000,000	\$4,850,000	4.9 to 1
Incident Management System*	\$19,300,000	\$640,000	30 to 1
Service Freeway Patrols	\$6,770,000	\$560,000	12 to 1
Cable TV Traveler Information System	\$6,710,000	\$340,000	20 to 1
Transit Information System	\$5,030,000	\$1,440,000	3.5 to 1
TOTAL	\$61,610,000	\$7,830,000	7.9 to 1

* includes accident investigation sites and incident detection system



How to implement this plan?

Implementing this Plan requires the collective efforts of the agencies involved its development. The following section outlines the roles and actions required of each public agency:

Nevada DOT

As the state agency in charge of planning, design, and maintenance of freeways and state highways, NDOT needs to expand its role into freeway traffic management and ITS operations. The following actions would be required:

- Set up an ITS operations/Advanced Technologies Division, which would be responsible for ITS planning, research, operational testing, design, implementation and operation.
- Develop an operations plan that determines the organizational structure and policies for freeway traffic management and incident traffic management.
- Develop an agreement with LVACTS to expand the current center to become the regional TMC which would co-locate the freeway management system, traffic signal system, traveler information system, and incident management information system.
- Obtain funding for the \$22 million freeway management system through standalone or combining with other projects into the STIP. The US-95 pilot corridor should be implemented first at a cost of \$5 million.
- Provide funding for the operation and maintenance of the freeway management system. It is estimated to cost \$2 million annually to operate the system.
- Coordinate with the RTC on "non-freeway related ITS projects" implementation.

- Work with the emergency response agencies to develop and implement an incident management system.
- Actively seek partnership with the private sector to implement other ITS programs.
- Actively educate and involve the public in ITS implementation through public meetings, newsletters, and other means.

Regional Transportation Commission of Clark County

As the regional metropolitan planning organization (MPO) as well as the public transit service provider, the Clark County RTC has the following responsibilities for ITS:

- Incorporate the ITS Plan into the Regional Transportation Plan (RTP), Transportation Improvement Plan (TIP) and coordinate with NDOT's development of the STIP through the RTC's Operations Subcommittee, the Executive Advisory Committee and the RTC Board.
- Participate and coordinate in ITS project development and implementation.
- Actively seek to fund and implement the "non-freeway related projects".
- Establish the RTC's Operations Subcommittee as the regional clearinghouse and coordinating entity for all new public ITS projects to facilitate synergistic integration of ITS deployment.
- As CAT system operator, actively seek to fund and implement the "transit related projects". \$3.0 million has been programmed in FY96-97 for a bus communication system that is part of the ITS plan.
- Actively seek partnership with the private sector to implement other ITS programs.
- Actively educate and involve the public in ITS implementation through public meetings, newsletters, and other means.

Clark County, and Cities of Las Vegas, Henderson and North Las Vegas and Boulder City

Clark County and local cities have the following roles and responsibilities:

- Participate and coordinate in ITS project development and implementation, especially "non-freeway related projects", through the RTC.
- Provide funding for operations and maintenance of the traveler information system and continued funding of LVACTS.
- Clark County, being lead agency for the Las Vegas Valley Beltway, should include extension of the freeway management system as part of the Beltway design and **construction**.
- Actively seek partnership with the private sector to implement other ITS programs.
- Actively educate and involve the public in ITS implementation through public meetings, newsletters, and other means.

Nevada Highway Patrol, and other emergency response agencies

The role of police agencies in ITS is primarily related to incident management. Such responsibilities include:

- Lead the implementation of an incident management system
- Provide staff at the Traffic Management Center to coordinate traffic management during incidents.

Config. 1

USER SERVICE:		Traveler Services Information Service		
SYSTEM CONFIGURATION:		Dissemination Methods		
CONFIGURATION OPTION:		Telephone		
DESCRIPTION:		The use of wireline or wireless telephone services to access traveler related services information		
<u>Evaluation Factor</u>	<u>Weight</u>	<u>Rating</u>	<u>Product</u>	<u>Comments</u>
Travel Time Benefit	90	6	540	
Increased Safety	90	5	450	
Out-of -Vehicle Traveler Interface Impact	25	8	200	
In-Vehicle Traveler Interface Impact	20	4	80	
1-Way Mobile Communications Impact	10	8	80	
2-Way Mobile Communications Impact	10	3	30	
Stationary Communications Impact	20	4	80	
Deployment Cost	30	5	150	
Reliability/Maintainability/Cost	20	6	120	
Jurisdictional Cost	20	6	120	
ITS Architecture Compatibility	10	5	50	
Technology Development/Risk	10	5	50	
Ease of Integration with System	25	6	150	
Total Product			2100	
Maximum Product			3800	
Normalized Rating			55.3%	

USER SERVICE:		Traveler Services Information Service		
SYSTEM CONFIGURATION:		Dissemination Methods		
CONFIGURATION OPTION:		Radio		
DESCRIPTION:		The use of commercial or dedicated radio broadcast to obtain traveler related services information		
<u>Evaluation Factor</u>	<u>Weight</u>	<u>Rating</u>	<u>Product</u>	<u>Comments</u>
Travel Time Benefit	90	5	450	
Increased Safety	90	5	450	
Out-of -Vehicle Traveler Interface Impact	25	8	125	
In-Vehicle Traveler Interface Impact	20	4	80	
1-Way Mobile Communications Impact	10	4	40	
2-Way Mobile Communications Impact	10	8	80	
Stationary Communications Impact	20	5	100	
Deployment Cost	30	6	180	
Reliability/Maintainability/Cost	20	6	120	
Jurisdictional Cost	20	6	120	
ITS Architecture Compatibility	10	7	70	
Technology Development/Risk	10	5	50	
Ease of Integration with System	25	6	150	
Total Product			2015	
Maximum Product			3800	
Normalized Rating			53.0%	